

G. GODDU.
FASTENER SUPPLYING AND DELIVERING MECHANISM.
APPLICATION FILED MAR. 2, 1911.

1,047,202.

Patented Dec. 17, 1912.

3 SHEETS—SHEET 1.

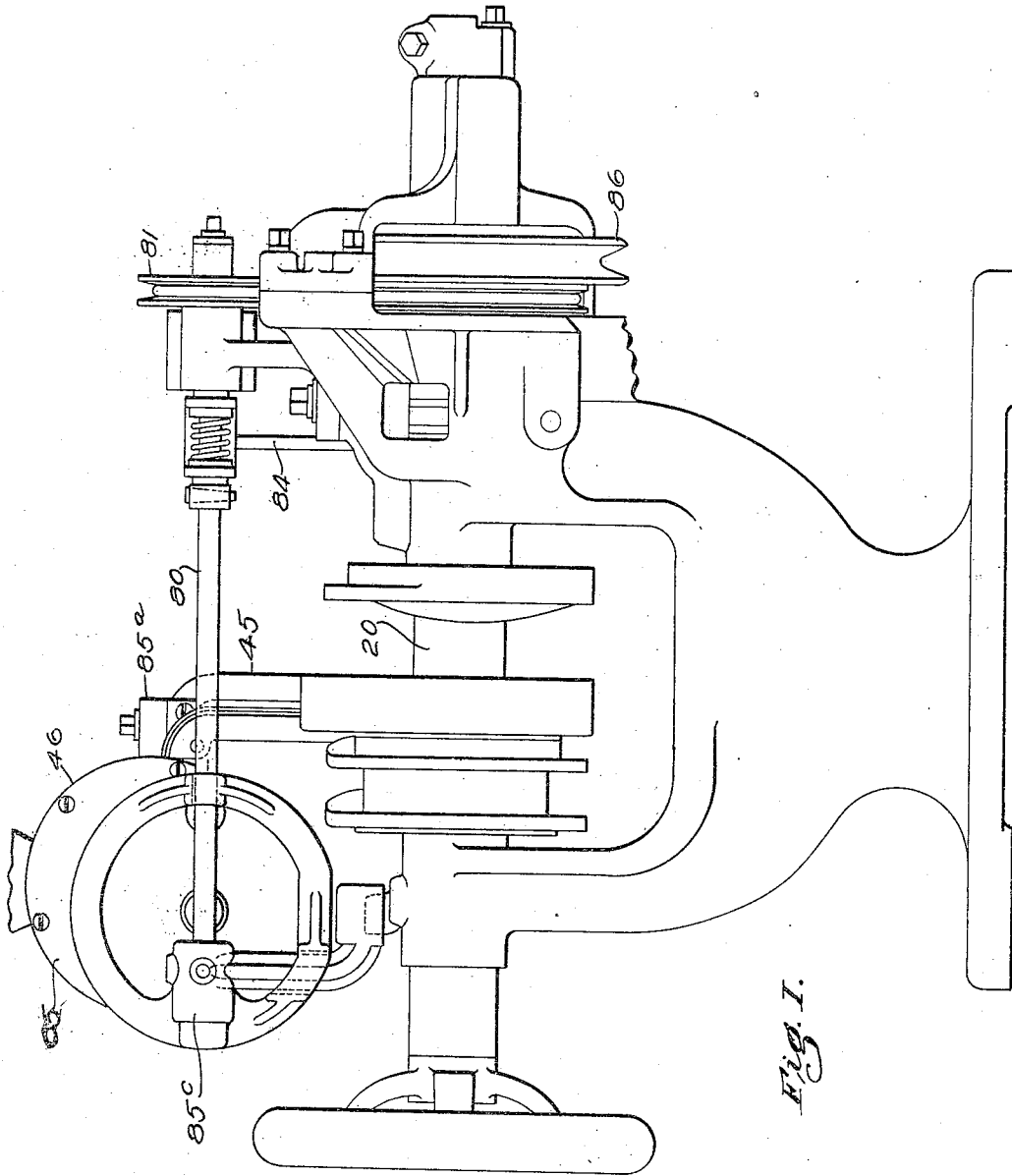


Fig. 1.

Witnesses:

Reverell F. Hatch
Walter J. Cyden

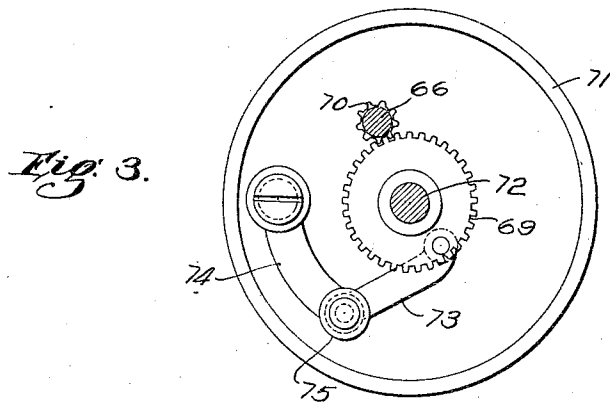
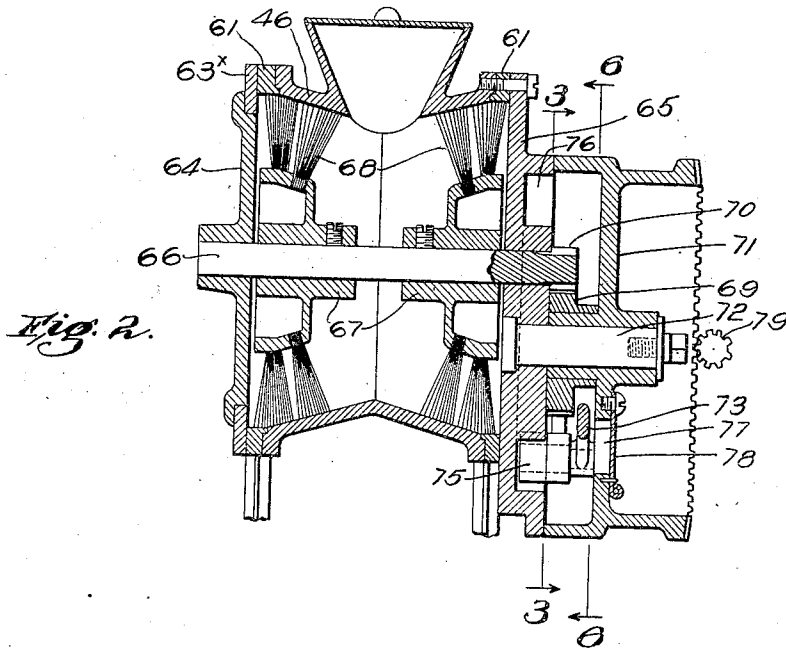
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

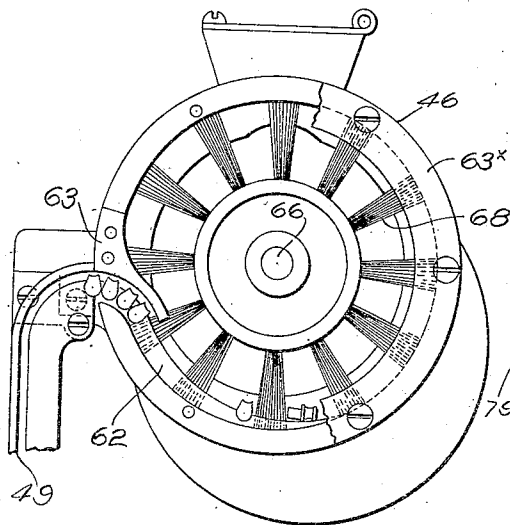


Fig. 4.

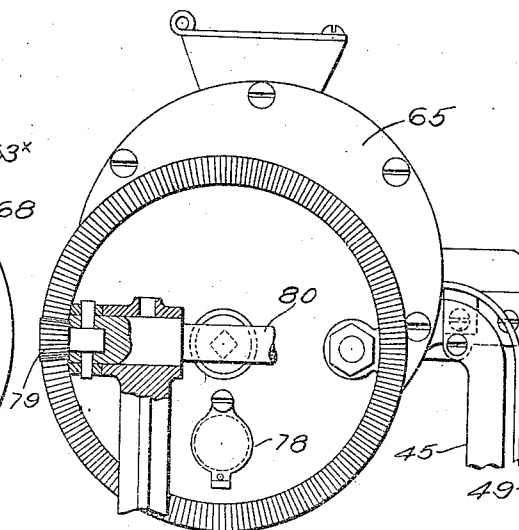


Fig. 5.

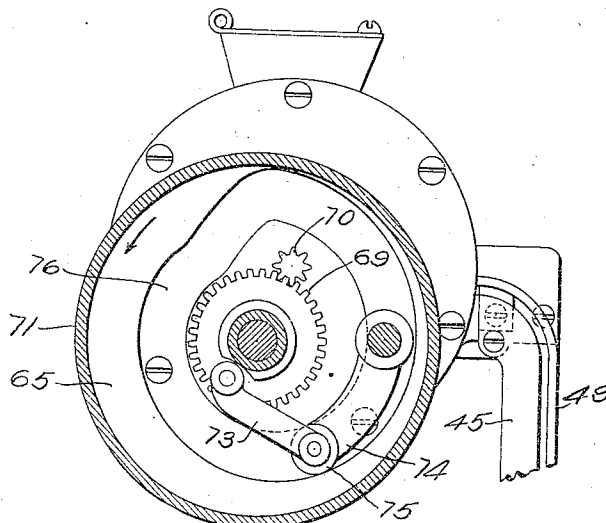


Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE GODDU, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

FASTENER SUPPLYING AND DELIVERING MECHANISM.

1,047,202.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed March 2, 1911. Serial No. 611,774.

To all whom it may concern:

Be it known that I, GEORGE GODDU, a citizen of the United States, residing at Winchester, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Fastener Supplying and Delivering Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to fastener supplying and delivery mechanism for fastener inserting machines. It is particularly adapted to supplying and delivering lacing hooks for boots and shoes to suitable hook setting devices, although the invention is not limited in its application to that particular form of fastener.

The invention is shown as applied to the machine for setting lacing hooks, illustrated and described in the inventor's co-pending application Serial No. 271,426, filed July 27, 1905, from which the present application has been divided, but the invention is not limited in its use to that particular type of lacing hook setting machine.

One object of this invention is to provide a mechanism of the character described which will deliver hooks or other fasteners from a hopper to a raceway leading to the setting devices properly positioned and with sufficient rapidity to insure that the supply in the raceway shall never be exhausted.

Another object is to provide means for releasing any hooks which may become clogged in the hopper at the point of delivery to the raceway.

In accordance with these objects, a principal feature of the invention comprises a hopper having therein a rotary brush adapted to sweep the fasteners from the hopper into the raceway, and means for positively rotating the brush alternately in opposite directions through predetermined angular distances, the angular movement imparted to the brush in one direction being greater than the movement in the opposite direction. The rotary movements of the brush in one direction thus act to sweep the hooks rap-

idly into the raceway and the shorter reverse movements of the brush act to dislodge hooks that may have become jammed at the entrance of the raceway.

Other features of the invention, including certain details of construction and combinations of parts, will be further explained in the following description and all the features of invention will then be pointed out in the appended claims.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a rear elevation of the machine for setting fasteners, having in connection therewith the improved fastener supplying and delivery mechanism; Fig. 2 is a central longitudinal section of the hopper, brushes and mechanism for actuating the brushes to sweep the lacing hooks into the raceways; Fig. 3 is a sectional view taken on the line 3-3 of Fig. 2, and looking in the direction of the arrows; Fig. 4 is a front elevation of the hopper and a portion of one of the raceways leading therefrom, the end cap of the hopper being removed and a portion of the ring at the end of the hopper being broken away; Fig. 5 is a rear elevation of the hopper and of the upper portion of the other raceway, also showing the upper end of the standard in which the horizontal shaft for driving the brush actuating mechanism is journaled; and Fig. 6 is a sectional view taken on the line 6-6 of Fig. 2.

The particular type of fastener setting machine which may be used in connection with this invention is not of present importance, therefore, merely a general indication is given in Fig. 1 of a machine for setting fasteners, such machine being the same as that fully illustrated and described in the co-pending application Serial No. 271,426, to which reference has been made. In this machine the operative parts are actuated from the main shaft 20 which is driven by the pulley 86.

Referring now to the features of the present invention, a hopper 46 is supported on the frame of the machine in any convenient manner and raceways, consisting of

plates 45 secured at their upper ends to the hopper 46, lead to the hook setting devices. The plates 45 are adapted to enter the space between the head and shank of a hook, and thus support the hooks as they pass side-
 5 wise along the plates from the hopper to the setting dies. As the hooks pass along the plates 45 under the force of gravity, they are held upon the plates and guided
 10 by guard plates 49 arranged at right angles to the plates 45 and separated therefrom a sufficient distance to form a slot to receive the necks of the hooks.

The hopper 46 in which the hooks are placed loosely, and from which they are delivered to the raceways, comprises a body portion substantially cylindrical in shape, but smaller at the center than at the ends, so that the hooks placed in the hopper tend to fall toward the ends. At each end of the hopper is a ring 61 the inner surface of which is cylindrical and forms a continuation of the inner surface of the body portion. From this cylindrical surface ribs 62 (Fig. 4) project, which ribs extend to the outlets of the hopper and abut against the upper ends of the plates 45 of the raceways. These ribs constitute means for properly positioning the lacing hooks; the ribs entering the space between the head and base of the hooks, and guiding the hooks as they are swept out of the hopper. At the outlets of the hopper guard plates 63 are provided which extend a short distance into the hopper over the ribs 62 and at their outer ends abut against the guard plates 49 of the raceways so as to in effect form continuations thereof. The forward end of the hopper is closed by a ring 63*, and a removable plate 64. The rear end of the hopper is closed by a plate 65. In these plates a shaft 66 is journaled upon which are secured hubs 67 provided with brushes 68 arranged to pass through the mass of hooks in the lower portion of the hopper and sweep the hooks along the ribs 62 into the raceways.

During the operation of the machine the brushes 68 are rotated alternately in opposite directions, a number of revolutions being imparted to the brushes in one direction to sweep the hooks into the raceways, and then a partial revolution being imparted to the brushes in the opposite direction to dislodge hooks which may have become jammed at the entrance of the raceways. The mechanism for imparting these movements to the brushes comprises a rotary driven member connected to the brushes, a rotary driving member, connections between the driving and the driven members, and a cam acting on the connections to vary the movement of the driven member. The driven member consists of a
 65 gear 69 meshing with a pinion 70 on the

shaft 66 of the brushes and mounted to rotate loosely on the hub of the driving member 71. The driving member 71 is substantially cylindrical in shape, and is provided with a central web connecting the periphery to the hub, which is mounted to rotate upon a stud 72 secured in the plate 65. The connection between the driving member 71 and the driven member 69 consists of two links 73 and 74 pivotally connected together and pivotally connected respectively to the driving and driven members. At the point where the links 73 and 74 are pivotally connected a cam roll 75 is provided which engages a cam groove 76 formed in the plate 65. The shape of this cam groove is clearly shown in Fig. 6, and it will be apparent from an inspection of this figure that during the greater portion of the revolution of the driving member 71 which rotates with the arrow on Fig. 6, the cam roll 75 is traveling up a gradual rise of the cam groove, and that during a small portion of the revolution of the driving member the cam roll is traveling down the steep drop of the cam groove. While the cam roll is traveling up the gradual rise of the cam groove, the driven member 69 is given a slow forward rotation with relation to the driving member 71, so that the driven member rotates in the same direction as the driving member so long as the cam roll 75 remains on the rising portion of the cam. When, however, the cam roll passes down the abrupt drop of the cam groove, a rapid backward rotation relatively to that of the driving member is imparted to the driven member 69, which backward rotation is sufficiently rapid to reverse the direction of rotation of the brush shaft. During each revolution of the driving member a plurality of rotations in one direction is imparted to the shaft 66 of the brushes and then a partial reverse rotation.

The inner or front edge of the periphery of the driving member 71 extends into close proximity to the face of the plate 65 so that a chamber is formed which incloses the gear 69, the pinion 70 and the link connections between the driving member 71 and the gear 69. In order to provide a convenient means for oiling the cam groove 76 and the pivotal connections between the links 73 and 74, an opening 77 is provided in the central web of the driving member, which is closed by a removable cover 78.

The outer or rear edge, of the periphery of the driving member 71 is provided with teeth with which the pinion 79 meshes, through which a continuous rotation may be imparted to the driving member. The pinion and the teeth on the driving member are inclosed by a casing 85 supported from one of the brackets in which a shaft 80 is journaled. The pinion 79 is secured upon
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one end of the shaft 80 (Fig. 1), journaled in brackets extending upwardly from the frame of the machine. At the other end of the shaft a driving pulley 81 is provided and a clutch mechanism by means of which the shaft can be clutched to the pulley. The clutch mechanism may be of any well known construction and, therefore, has not been illustrated in detail in the drawings. The clutch may be operated by a rod 84 and a suitable treadle mechanism in connection therewith.

While in the appended claims the term "brush" has been used to define the rotary device which sweeps the fasteners from the hopper into the raceway, it should be distinctly understood that it is not intended to limit the invention to the use of a brush in the narrower meaning of the word. In interpreting the claims, therefore, this term should be read in its broader sense and as inclusive of any device which may be used to perform the functions of the illustrated brush.

It will be apparent that many changes in the form and construction of the illustrated embodiment of the invention may be made within the scope of the invention, characterizing features of which are set forth in the following claims by the intentional use of generic terms and expressions inclusive of various modifications.

What is claimed as new, is:—

1. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush arranged to sweep the fasteners into the raceway, and means for positively rotating the brush alternately in opposite directions through predetermined angular distances acting to impart a greater angular movement to the brush in one direction than in the other, substantially as described.

2. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush arranged to sweep the fasteners into the raceway, and means for rotating the brush continuously in one direction through a plurality of revolutions and for then rotating the brush through a predetermined less distance in the opposite direction, substantially as described.

3. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush arranged to sweep the fasteners into the raceway, and means for rotating the brush alternately in opposite directions for definite and predetermined periods of time, and for longer periods of time in one direction than in the other, substantially as described.

4. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush arranged to sweep the fasteners into the raceway, means for rotating

the brush alternately in opposite directions comprising a rotary driven member connected to the brush, a rotary driving member, connections between said members, and a cam acting on said connections, to vary the motion of the driven member, substantially as described.

5. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush arranged to sweep the fasteners into the raceway, means for rotating the brush alternately in opposite directions, comprising a rotary driven member connected to the brush, a rotary driving member concentric with the driven member, a link connection between said members, and a cam acting on the link connection to vary the motion of the driven member, substantially as described.

6. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a shaft carrying a brush arranged to sweep the fasteners into the raceway, a pinion on the shaft, a gear meshing with the pinion, a jointed connection between the gear and a constantly rotated driving member, and means for varying the angle of the jointed connection to vary the speed and direction of rotation of the brush, substantially as described.

7. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a shaft carrying a brush arranged to sweep the fasteners into the raceways, a link operatively connected to the brush shaft, a second link connecting the first link with a rotatable casing inclosing said links, and a cam formed on the hopper and engaging a cam roll carried at the connection between the two links and adapted to vary the angular relation of the links for the purpose of varying the speed and direction of rotation of the brush, substantially as described.

8. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush arranged to sweep the fasteners into the raceway, means for rotating the brush alternately in opposite directions comprising a rotary driven member connected to the brush, a rotary driving member constructed to inclose the brush actuating means, connections between said members, and a cam formed on the hopper and acting on said connections to vary the motion of the driven member, substantially as described.

9. The combination with a hopper to receive fasteners and a raceway leading therefrom, of a brush shaft within the hopper, a rotary driving member, means for rotating the driving member, a stationary cam path, a link connected at one end to the driving member and having at the other end a roll arranged to travel in the cam path, a

second link connected at one end to the roll carrying end of the first link and at its other end to a wrist pin on a freely rotatable gear, and a pinion on the brush shaft connecting the shaft and gear, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

GEORGE GODDU.

Witnesses:

CHESTER E. ROGERS,
LAURA M. GOODRIDGE.